CLAIMS

1. A laser irradiation method comprising:

delivering a laser beam to a semiconductor layer;

scanning the semiconductor layer to a first direction with the laser beam in a first intensity; and

scanning the semiconductor layer to a second direction with the laser beam in a second intensity,

wherein the first intensity is larger than the second intensity.

2. The laser irradiation method according to claim 1,

wherein the laser beam is delivered obliquely to the semiconductor layer.

3. The laser irradiation method according to claim 1,

wherein the first direction and the second direction is reverse direction.

4. The laser irradiation method according to claim 1,

wherein the semiconductor layer moves to a direction reverse to the first direction, when the semiconductor layer is scanned to a first direction.

5. The laser irradiation method according to claim 1,

wherein the semiconductor layer moves to a direction reverse to the second direction, when the semiconductor layer is scanned to a second direction.

6. A laser irradiation method comprising:

emitting a first laser beam;

changing the first laser beam into a second laser beam through means for varying beam intensity which can vary beam intensity in accordance with a scanning direction;

changing the second laser beam into a third laser beam;

delivering the third laser beam to an irradiation surface; and

scanning the irradiation surface with the third laser beam.

7. The laser irradiation method according to Claim 6,

wherein the third laser beam is delivered obliquely to the irradiation surface.

8. The laser irradiation method according to Claim 6,

wherein the first laser beam is emitted from a laser oscillator.

9. The laser irradiation method according to Claim 6,

wherein the means for varying beam intensity comprises at least one of polarizing plates and an ND filter.

10. The laser irradiation method according to Claim 6,

wherein the second laser beam is changed into a third laser beam through at least one of a convex lens and a diffractive optical element.

11. The laser irradiation method according to claim 6,

wherein the irradiation surface moves to a direction reverse to the scanning direction, when the irradiation surface is scanned with the third laser beam.

12. The laser irradiation method according to claim 6,

wherein the irradiation surface is a surface of a semiconductor layer.

13. A laser irradiation apparatus comprising:

a laser oscillator;

means for varying beam intensity; and

a convex lens;

wherein a laser beam is incident into an irradiation surface,

wherein the irradiation surface is scanned with the laser beam, and

wherein beam intensity is varied in every scanning direction by the means for varying beam intensity.

14. The laser irradiation apparatus according to claim 13,

wherein the laser beam passed through the convex lens or the diffractive optical element has a rectangular, linear, or elliptical shape on the irradiation surface.

15. The laser irradiation apparatus according to claim 13,

wherein the means for varying beam intensity comprises at least one of a polarizing plate and an ND filter.

16. The laser irradiation apparatus according to claim 15,

wherein the number of the polarizing plates is more than one.

17. The laser irradiation apparatus according to claim 13,

wherein the laser oscillator is a continuous wave solid-state laser, gas laser, or metal laser or a pulsed solid-state laser, gas laser, or metal laser.

18. The laser irradiation apparatus according to claim 13,

wherein the laser oscillator is one selected from the group consisting of continuous wave or pulsed YAG laser, YVO_4 laser, YLF laser, $YAlO_3$ laser, $GdVO_4$ laser, Y_2O_3 laser, glass laser, ruby laser, alexandrite laser, and Ti:sapphire laser.

19. The laser irradiation apparatus according to claim 13,

wherein the laser oscillator is one selected from the group consisting of an Ar laser, a Kr laser, and a CO_2 laser.

20. The laser irradiation apparatus according to claim 13,

wherein the laser oscillator is one selected from the group consisting of a YVO_4 laser, a $GdVO_4$ laser, and a YAG laser which have a repetition frequency of 10 MHz or more.

21. The laser irradiation apparatus according to claim 13,

wherein the laser beam emitted from the laser oscillator is converted into a harmonic by a non-linear optical element.

22. A laser irradiation apparatus comprising:

a laser oscillator;

means for varying beam intensity; and

a diffractive optical element;

wherein a laser beam is incident into an irradiation surface,

wherein the irradiation surface is scanned with the laser beam, and

wherein beam intensity is varied in every scanning direction by the means for varying beam intensity.

23. The laser irradiation apparatus according to claim 22,

wherein the laser beam passed through the convex lens or the diffractive optical element has a rectangular, linear, or elliptical shape on the irradiation surface.

24. The laser irradiation apparatus according to claim 22,

wherein the means for varying beam intensity comprises at least one of a polarizing plate and an ND filter.

25. The laser irradiation apparatus according to claim 24,

wherein the number of the polarizing plates is more than one.

26. The laser irradiation apparatus according to claim 22,

wherein the laser oscillator is a continuous wave solid-state laser, gas laser, or metal laser or a pulsed solid-state laser, gas laser, or metal laser.

27. The laser irradiation apparatus according to claim 22,

wherein the laser oscillator is one selected from the group consisting of continuous wave or pulsed YAG laser, YVO_4 laser, YLF laser, $YAlO_3$ laser, $GdVO_4$ laser, Y_2O_3 laser, glass laser, ruby laser, alexandrite laser, and Ti:sapphire laser.

28. The laser irradiation apparatus according to claim 22,

wherein the laser oscillator is one selected from the group consisting of an Ar laser, a Kr laser, and a CO_2 laser.

29. The laser irradiation apparatus according to claim 22,

wherein the laser oscillator is one selected from the group consisting of a YVO_4 laser, a $GdVO_4$ laser, and a YAG laser which have a repetition frequency of 10 MHz or more.

30. The laser irradiation apparatus according to claim 22,

wherein the laser beam emitted from the laser oscillator is converted into a harmonic by a non-linear optical element.

31. A laser irradiation apparatus comprising:

a laser oscillator;

means for varying beam intensity; and

a convex lens;

wherein a laser beam is incident obliquely into an irradiation surface,

wherein the irradiation surface is scanned with the laser beam, and

wherein beam intensity is varied in every scanning direction by the means for varying beam intensity.

32. The laser irradiation apparatus according to claim 31,

wherein the laser beam passed through the convex lens or the diffractive optical element has a rectangular, linear, or elliptical shape on the irradiation surface.

33. The laser irradiation apparatus according to claim 31,

wherein the means for varying beam intensity comprises at least one of a polarizing plate and an ND filter.

34. The laser irradiation apparatus according to claim 33,

wherein the number of the polarizing plates is more than one.

35. The laser irradiation apparatus according to claim 31,

wherein the laser oscillator is a continuous wave solid-state laser, gas laser, or metal laser or a pulsed solid-state laser, gas laser, or metal laser.

36. The laser irradiation apparatus according to claim 31,

wherein the laser oscillator is one selected from the group consisting of continuous wave or pulsed YAG laser, YVO_4 laser, YLF laser, $YAlO_3$ laser, $GdVO_4$ laser, Y_2O_3 laser, glass laser, ruby laser, alexandrite laser, and Ti:sapphire laser.

37. The laser irradiation apparatus according to claim 31,

wherein the laser oscillator is one selected from the group consisting of an Ar laser, a Kr laser, and a CO_2 laser.

38. The laser irradiation apparatus according to claim 31,

wherein the laser oscillator is one selected from the group consisting of a YVO_4 laser, a $GdVO_4$ laser, and a YAG laser which have a repetition frequency of 10 MHz or more.

39. The laser irradiation apparatus according to claim 31,

wherein the laser beam emitted from the laser oscillator is converted into a harmonic by a non-linear optical element.

40. A laser irradiation apparatus comprising:

a laser oscillator;

means for varying beam intensity; and

a diffractive optical element;

wherein a laser beam is incident obliquely into an irradiation surface,

wherein the irradiation surface is scanned with the laser beam, and

wherein beam intensity is varied in every scanning direction by the means for varying beam intensity.

41. The laser irradiation apparatus according to claim 40,

wherein the laser beam passed through the convex lens or the diffractive optical element has a rectangular, linear, or elliptical shape on the irradiation surface.

42. The laser irradiation apparatus according to claim 40,

wherein the means for varying beam intensity comprises at least one of a polarizing plate and an ND filter.

43. The laser irradiation apparatus according to claim 42,

wherein the number of the polarizing plates is more than one.

44. The laser irradiation apparatus according to claim 40,

wherein the laser oscillator is a continuous wave solid-state laser, gas laser, or metal laser or a pulsed solid-state laser, gas laser, or metal laser.

45. The laser irradiation apparatus according to claim 40,

wherein the laser oscillator is one selected from the group consisting of continuous wave or pulsed YAG laser, YVO_4 laser, YLF laser, $YAlO_3$ laser, $GdVO_4$ laser, Y_2O_3 laser, glass laser, ruby laser, alexandrite laser, and Ti:sapphire laser.

46. The laser irradiation apparatus according to claim 40,

wherein the laser oscillator is one selected from the group consisting of an Ar laser, a Kr laser, and a CO_2 laser.

47. The laser irradiation apparatus according to claim 40,

wherein the laser oscillator is one selected from the group consisting of a YVO_4 laser, a $GdVO_4$ laser, and a YAG laser which have a repetition frequency of 10 MHz or

more.

48. The laser irradiation apparatus according to claim 40,

wherein the laser beam emitted from the laser oscillator is converted into a harmonic by a non-linear optical element.